Claims

1. Method for converting CO on one side of a membrane in the presence of water to $CO_2$ and $H_2O$ on said one side of said membrane, $H_2$ passing through said membrane to the other side of said membrane and said hydrogen being combusted on said other side with oxygen fed to said other side, characterised in that the feed to the one side of the membrane comprises anode off-gas from a fuel cell.

2. Method according to Claim 1, characterised in that said oxygen comprises cathode off-gas from a fuel cell.

3. Method according to Claim 1, wherein said oxygen is fed to the cathode of a fuel cell.

4. Method according to Claim 1, wherein said oxygen comprises air.

5. Method according to one of the preceding claims, wherein water is separated off from the off-gas originating from said one side of said membrane.

6. Method according to one of the preceding claims, wherein the heat from the off-gas from at least one of the sides of said membrane is recovered.

7. Method according to one of the preceding claims, wherein the oxygen-containing gas is introduced on said other side of the membrane under elevated pressure.

8. Method according to one of the preceding claims, wherein the gas containing water originating from the other side of said membrane is fed to a further step for converting CO on one side of a further membrane in the presence of water to give $CO_2$ and $H_2O$ on the one side of said further membrane, $H_2$ passing through said further membrane to the other side of said further membrane.

9. Method according to Claim 7, wherein a separate oxygen-containing stream is fed to the inlet of said one side of said further membrane.

10. System (1, 11, 21, 31, 41, 56) comprising an SOFC fuel cell and a device (3, 13, 23, 33, 40, 43, 63, 73) for reacting CO and $H_2$, comprising a hydrogen-permeable membrane (8) bounded on either side by, respectively, a first (6) and a second (7) chamber, wherein said first chamber is provided with feed means for CO and $H_2$ and with discharge means for $CO_2$ and $H_2O$ and said second chamber (7) is constructed as a combustion chamber and is provided with oxygen feed means and water discharge means, wherein the anode outlet of said SOFC is connected to said first chamber.

11. System according to Claim 10, wherein the cathode outlet of said SOFC is connected to said second chamber.

12. System according to Claim 10, wherein the cathode inlet is connected to said second chamber.

13. System according to one of Claim 10 - 12, wherein the outlet of said first chamber is provided with water removal means.

14. System according to one of Claims 10 - 13, wherein the outlet of said second chamber is connected to the expander (28, 37, 38, 47, 48) of a gas turbine (25, 35, 45, 56).

15. System according to Claim 14, wherein the gas fed to the second chamber of said membrane is fed through a compressor (27, 36, 46, 66) of said turbine (25, 35, 45, 56).

16. System according to one of Claims 10 - 15, wherein the outlet of said turbine is connected to the cathode inlet of a further SOFC (39).

17. System according to Claim 16, wherein said further SOFC is connected to a system according to one of Claims 10 - 13.

18. System according to one of Claims 10 - 17, comprising a further device (74, 75) for reacting CO and $H_2$, comprising a hydrogen-permeable membrane delimited on either side by, respectively, a first and second chamber, wherein said first chamber is provided with

feed means for CO and $H_2$ and is provided with discharge means for $CO_2$ and $H_2O$ and said second chamber is constructed as a combustion chamber and provided with a feed connected to the discharge from the second chamber of said device (3, 13, 23, 33, 40, 43, 63, 73) for reacting CO and $H_2$.

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19. System according to Claim 18, wherein said second chamber is provided with separate oxygen feed means.